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Competition in Coastal Seas

An Evaluation of Foreign Maritime Activities in the 200-Mile EEZ

Background Paper

CONGRESS OF THE UNITED STATES OFFICE OF TECHNOLOGY ASSESSMENT

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Foreword

In recent years, the U.S. maritime industry has had increasing difficulty with foreign competition for shipping and other services performed in coastal and offshore waters. Some segments of the industry have been protected from such competition by "cabotage" laws that require ships engaged in coastal trade to be domestically built and operated, but others have not. The current variety and complexity of maritime activities in U.S. offshore waters has led to a greater participation by foreign firms and a consequent weakening of certain U.S. maritime firms.

The House Committee on Merchant Marine and Fisheries requested the Office of Technology Assessment to evaluate the costs and benefits of extending cabotage laws to a range of other maritime activities in the newly established 200-mile Exclusive Economic Zone (EEZ). The objective was to determine whether such legislation could help the domestic industry without causing other economic distortions.

This background paper reviews the status of the major sectors of the maritime industry engaged in EEZ activities and notes the significant trends. Basic data on the major sectors were first prepared for OTA by the Maritime Administration. OTA then conducted a survey of industry and other interested parties and prepared the analyses in the paper. The analysis indicates that extensions of cabotage laws would more likely result in shifts among industrial sectors than to significant growth in U.S. maritime business overall. OTA appreciates the valuable assistance in the preparation of this paper from numerous organizations and individuals listed in Appendix A. However, OTA is solely responsible for the results of this study.

JOHN H. GIBBONS
Director

OTA Project Staff: Competition in Coastal Seas

John Andelin, *Assistant Director, OTA*
Science, Information, and Natural Resources Division

Robert W. Niblock, *Oceans and Environment Program Manager*

Peter A. Johnson, *Project Director*

Administrative Staff

Kathleen A. Beil
Sally Van Aller

Contents

	Page
Chapter 1. Summary	3
Chapter 2. The Policy Setting	7
Current Cabotage Policies	7
Proposals To Change Policies	7
Chapter 3. Maritime Activities in the EEZ	11
Chapter 4. Analysis of Four Maritime Sectors	13
Virgin Islands Trade	13
Offshore Lightering	15
Oil and Gas Exploration and Development	19
Commercial Cruise Vessels	23
Chapter 5. Summary of Impacts From Extending Cabotage Policies	29
Appendix A. List of Respondents to OTA Request for Data and Comments Re: Extending Cabotage Law	31
Appendix B. The Effects of Cabotage Policy Changes on Other Maritime Sectors	32

Figures

Figure	*Page*
1. U.S. Oil Imports, 1970-90	16
2. Percent of U.S. Oil Imports From the Middle and Far East	17

Tables

Table	*Page*
1. EEZ Maritime Activities Selected for Analysis	11
2. Virgin Islands Maritime Trade	14
3. Summary of Ship Voyages in the Virgin Islands/U.S. Refined Petroleum Product Trade, Calendar Years 1977-87	15
4. Vessels Engaged in U.S. Offshore Lightering, 1987	17
5. New Cruise Ships Entering The Market, 1988-91	25
6. Additional New Cruise Ships Entering The Market, 1990-92	25
7. Scenario Projections	25
8. Potential Increases in Seafaring Jobs With Extensions of Cabotage Laws	29
9. Potential for U.S. Shipbuilding With Extensions of Cabotage Laws	29
10. Potential of National Security Enhancements With Extensions of Cabotage Laws	29
11. Potential Negative Impacts With Extensions of Cabotage Laws	29

Photo credit: Port of Miami

The Port of Miami, shown here, is the base of operations for a fleet of the largest cruise vessels in the world, all operating under foreign flags. The vessels generally operate from the United States to Caribbean ports and are not subject to laws governing domestic, coastal shipping ("cabotage").

Chapter 1
Summary

Major maritime nations worldwide have a long history of devising laws and regulations to promote and protect their own merchant marine. In decades, and even centuries, past, a strong maritime industry has been a nation's foundation for both military and economic security. Even in the modern, high-tech world, ships carry over 90 percent of international trade, and the merchant marine remains an important national resource for the transportation of cargo and personnel for defense purposes.

One common approach to promote and protect the maritime industry has been to prohibit foreign vessels from participating in domestic, coastal (or "cabotage") shipping. Most, if not all, nations with a seafaring history have so-called cabotage laws that require ships engaged in coastal trade to be domestically built, owned, and operated. The United States is no exception. U.S. laws define coastal trade, in general, as the transportation of either passengers or cargo between two points within the United States. In general, no foreign vessels may engage in such trades.

In recent times, the variety and complexity of shipping and other maritime activities along our coasts and in the nearby ocean have multiplied. Past policies and definitions no longer apply unambiguously to many of these offshore operations. New laws, regulations, and interpretations are in place that include some specific activities and exclude others from the concept of cabotage law. Some new policies have extended U.S. jurisdiction over ocean zones adjacent to our coasts. The United States now claims jurisdiction over all fisheries (except highly migratory species like tuna) resources within a 200-mile conservation zone, and all seabed mineral resources on the continental shelf off our coasts and beyond to any point where extraction is feasible. In 1983 a Presidential proclamation created a 200-mile Exclusive Economic Zone (EEZ) consistent with that established by many other countries who are parties to the international Law of the Sea Convention (the United States is not a signatory). In 1988, the President issued a proclamation that extended our territorial sea from 3 miles to 12 miles. According to an interpretation by the U.S. Customs Service, this proclamation was for international purposes only and does not affect the definition in cabotage laws of a 3-mile territorial sea.

Within this framework of change, advocates of the U.S. maritime industry have made proposals to expand the concepts of cabotage law or to more carefully define the coverage of existing laws in order to limit "unfair" foreign competition that has inevitably expanded its presence. These proposals are subject to considerable debate because a number of industry sectors could experience economic effects from policies that restrict international competition. In order to better understand the costs and benefits from several proposed policy changes, the House Committee on Merchant Marine and Fisheries asked the Office of Technology Assessment (OTA) to study "the economic and national security impacts of extending the cabotage policy to all forms of commercial maritime activities conducted within the Exclusive Economic Zone." In addition, they asked OTA to "assess the economic and national security impact of extending the existing cabotage laws to the Virgin Islands." This background paper is the result of that requested study.

In its analysis, OTA found that foreign competition has indeed become a factor in a number of maritime activities within the EEZ. This competition, however, has also been limited, both by traditional U.S. coast-wise shipping laws as well as several specific, newer applications of those laws.

For example, while U.S. builders of offshore oil platforms must compete with those of Korea

and Singapore in the EEZ, the transportation associated with the offshore oil industry is protected from foreign competition by U.S. Customs Service rulings, based on the Outer Continental Shelf (OCS) Lands Act, that make such transportation, in effect, coast-wise trade. Also, while foreign competition for some shipping services within the EEZ is now allowed in offshore lightering[1] of foreign-flag tankers and in trade with certain U.S. territories, these activities have not represented major areas of business growth. In addition, some newer laws have restricted foreign competition in such maritime activities as fish processing, offshore dredging, waste disposal, and marine mining in the EEZ.

Given this mixed situation, OTA reviewed the status of foreign competition for all significant maritime activities in the EEZ and selected four of these for further analysis of costs and benefits that might occur if cabotage laws were extended to them. OTA concluded that these four sectors—the Virgin Islands trade, offshore lightering, offshore oil and gas operations, and commercial cruises are both commercially significant and possibly subject to substantial impacts from cabotage laws. OTA also concluded that all other sectors had either minor commercial significance or were already generally subject to cabotage law.

In its four-sector evaluation, OTA found that very little hard data exist to project accurate, specific impacts from several possible changes to cabotage law that would tighten control over foreign participation in trade activities. However, OTA has taken the limited data as well as a variety of discussions and observations that were offered by industry representatives and produced the analyses in this report. In general, the analyses show that only a few specific benefits would result from the proposed changes. The following summarizes OTA's key findings:

- Of all the sectors evaluated, the commercial cruise industry—and especially the subsector of one-day cruises to nowhere—appears to have the most potential for significant benefits for U.S. interests if cabotage laws were applied. The business consequences of such an action are uncertain, but the added costs, if the action were successful, appear to be directed toward a generally healthy industry.
- Most industry respondents to OTA's inquiries believe that the consequences of extending cabotage laws will take the form of an industry shift to alternatives that just further avoid a commitment to U.S.-built and U.S.-operated vessels. The results, therefore, could lead to a decrease rather than an increase in opportunities for the U.S. maritime industry.
- National security enhancements from extending cabotage laws could take the form of possible additions to strategic sea-lift capability and increases in seafaring employment that would result. If the most favorable outcomes are assumed, the results could be U.S.-flag fleet additions of up to 20 shuttle tankers and 10 passenger ships. Both of these ship types are considered militarily useful. The Shipbuilding Industrial Base could also benefit if these vessels were built in U.S. yards.
- There are some obvious direct costs to other affected industries and to certain consumers if cabotage laws were extended. There are also some costs that are neither obvious nor certain. All of these must be carefully evaluated in each specific case in order to arrive at a sound policy choice.

[1]The practice of unloading cargo from very large ships into smaller vessels outside of a harbor, usually because the harbor or harbor entrance is too shallow for the larger ships.

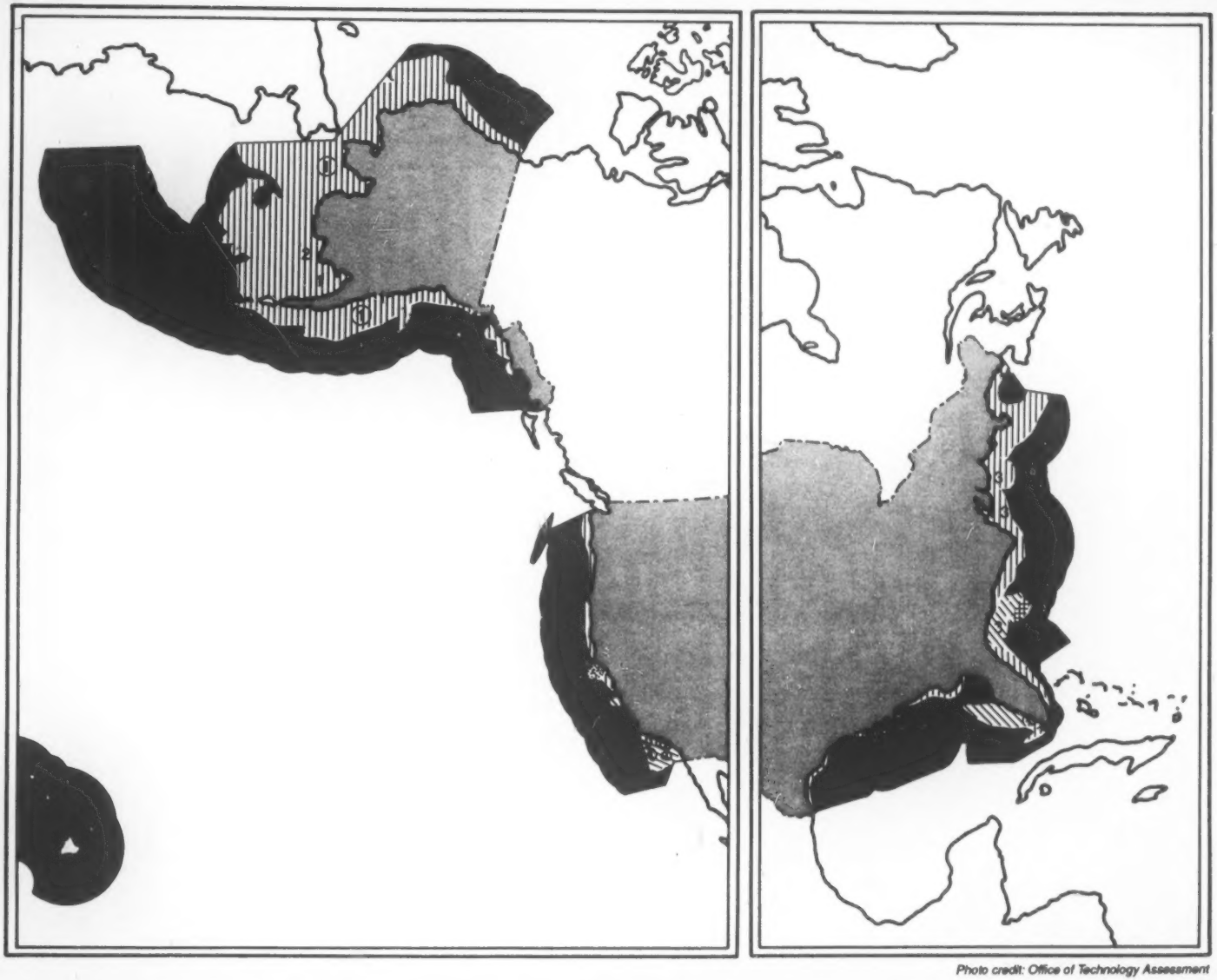


Photo credit: Office of Technology Assessment

The 200-mile Exclusive Economic Zone (EEZ), shown here, contains a sea surface area equivalent to more than two-thirds of the land area of the entire United States.

Chapter 2
The Policy Setting

CURRENT CABOTAGE POLICIES

Current U.S. cabotage and related laws apply to water transportation between points in the United States, including certain points on the Outer Continental Shelf (OCS), and to certain other marine activities conducted within U.S. territorial waters or the Exclusive Economic Zone (EEZ).[1 2] The term "cabotage," when used with regard to vessels, is usually defined to mean "coastal navigation and trade, especially between ports of a country." In the context of this report, however, "cabotage" is defined to mean the set of national policies or regulations that seek to reserve U.S. coast-wise navigation and trade solely to vessels that are U.S. built and operated.

The Customs Service enforces cabotage laws with authority from section 27 of the Merchant Marine Act of 1920 (the Jones Act), the Passenger Ship Act of 1886, and the Towing Act of 1940. The inclusion of certain points on the OCS within the realm of coast-wise trade is codified in the 1978 Amendments to the OCS Lands Act of 1953, and the inclusion of certain fishing vessels within the definition of "cabotage" policies is covered under Chapter 121 of Title 46, United States Code (46 U.S.C. ch. 121) and the Fisheries Conservation and Management Act of 1976.[3]

In addition to the above, a 1983 Presidential proclamation created a 200-mile EEZ that assured U.S. jurisdiction over the resources contained within waters of the zone as well as the seabed and subsoil beneath them.[4] A number of proposals since then have sought to include this EEZ within the various definitions of coast-wise trade and domestic maritime activities that could be subject to cabotage policies. This report examines the effects of such proposals to extend traditional cabotage policies by reviewing the status and trends of several important maritime activities and projecting the impacts that may occur should policy changes be made.

The scope of current U.S. cabotage policy is almost entirely based on the concept of transportation (of both cargo and passengers). Proposals to extend this policy have taken two general forms. One is to define more broadly, or more specifically, certain transportation routes (or points of origin and destination) so as to include trades previously excluded. This is known as a zonal approach. It could be considered an attempt to close "loopholes" in current policy. The second form is to include other, nontransportation activities under the concept of cabotage so as to require the use of U.S. built and operated vessels. This is usually known as a "functional approach." Such an approach has already been taken in the case of commercial fishing vessels. Both of these forms are examined in this report. An example of the first may be to extend cabotage to "cruises to nowhere" that begin and end in U.S. ports and stay within the EEZ. An example of the second may be to include certain oil-field service vessels that operate within the EEZ under cabotage policies.

PROPOSALS TO CHANGE POLICIES

In a December 1987 report, and again in September 1988, the Commission on Merchant Marine and Defense recommended the preservation, enforcement, and strengthening of current cabotage laws.[5 6] The 1987 report further recommended that a study be done of the costs and benefits of extending the

[1] "Extension of Cabotage to All Commercial Activities in the Exclusive Economic Zone," report prepared for OTA by the U.S. Maritime Administration, August 1988.

[2] Review of Maritime Administration report contained in letter to Peter Johnson, OTA, from B. James Fritz, Chief, Carrier Rulings Branch, U.S. Customs Service, Nov. 14, 1988.

[3] Mark Aspinwall "The Coastwise Trade Meets the Exclusive Economic Zone," winter 1988-89, vol. 31, No. 4, pp. 83-88.

[4] Executive Proclamation No. 5030 (1983).

[5] "Second Report of the Commission on Merchant Marine and Defense: Recommendations," prepared for the President and the Congress, Dec. 30, 1987, Washington, DC.

[6] "Third Report of the Commission on Merchant Marine and Defense: Findings of Fact and Conclusions," prepared for the President and the Congress, Sept. 30, 1988, Washington, DC.

Jones Act to the Virgin Islands trade and to commercial maritime activities within the 200-mile EEZ. The Commission has suggested that if prospective results from these actions are seen to be beneficial, Congress should pass appropriate legislation. The Commission's 1987 report pointed to loopholes and inconsistencies that allow profitable foreign-vessel operations within our EEZ. In its 1988 report, the Commission stated it was skeptical that many significant benefits would accrue from extending cabotage coverage. Reports from domestic operators to the Commission reinforced this conclusion.

In any case, proposals to strengthen and expand U.S. cabotage laws are supported mainly by the Commission's work. In addition, OTA has received a number of comments from industry supporters of these proposals.[7] Supporters argue that it is both appropriate and beneficial (to U.S. operators) to extend cabotagea laws. Most would limit the law's application to transportation of cargo and passengers, presumably because of historical precedent. Several proponents also note benefits to the U.S. shipbuilding industry from building more Jones Act vessels. The severe downturn of commercial shipbuilding in recent years not only affects the U.S. shipyard defense mobilization base but makes it more difficult for those remaining U.S.-flag operators to get reliable and cost-effective construction and repair work done. The common rationale for policies to assist and strengthen the U.S. merchant marine (U.S.-flag ship operators) and the U.S. shipbuilding base is that of national security. The Commission stresses the current shortfall in sea-lift capacity to respond to a national emergency. The most serious deficiency appears to be in seagoing manpower, but projections for the year 2000 show a substantial inability to meet defense requirements in manpower, shipbuilding, and operational vessels as well.

There is also substantial opposition to the notion of expanding U.S. cabotage laws—usually expressed by those concerned about either the direct effect upon other industries or the consumer, or the negative impact on principles of free trade and open competition.[8] In general, some direct effects upon other industries or consumers can be estimated if it is determined which path operators would take if cabotage policies change. The effects could be in the form of increased cost of services or a loss of one service sector in favor of another. It is very difficult, however, to trace the complete range of possible effects when many options are available to react to policy changes, and this is usually the case in coastal or EEZ maritime services. For example, an increase in costs for services to offshore oil operations could just add to the normal cost of producing oil (and be passed to consumers) or, if the costs are significant, they could affect decisions about future investments in offshore projects.

OTA has not analyzed the above wide range of possible economic effects. Instead, we have chosen some specific sectors and specific direct effects of changes to cabotage that can be readily anticipated.

In addition, the question of how policies to expand cabotage may be detrimental to notions of free and open trade is obvious. If one accepts the free-trade approach without qualification, then the consequences of foreign competition must be accepted. Some U.S. industry sectors, thus, may not survive. To assure their survival usually requires some compromise in free trade principles.

Finally, the need for a strong maritime industry as an arm of U.S. forces for defense can only be questioned by taking a view of defense strategy different from the current convention. OTA has not analyzed defense strategies. If one accepts current strategy, it is obvious that future military sea-lift requirements require a national shipping and shipbuilding capability. At present that capability is being met by an increase in the military support fleet and reserve fleets rather than a substantial reliance on U.S. commercial maritime capabilities. Those that support policies to strengthen the U.S. merchant marine—such as expanding cabotage—claim that military needs can be more effectively and efficiently served this way. OTA has not analyzed the relative costs and benefits of this approach. But, it is clear that the added cost of any extension of cabotage by government fiat will be borne by the private sector even if the policy would be more efficient for the Nation as a whole.

[7]See list of respondents (app. A of this report) to OTA's inquiry about data and comments on cabotage policies.

[8]Ibid.

In sum, the basic policy debate about whether expansion of certain cabotage laws would enhance national security in the most efficient way hinges on military strategy concepts that are beyond the scope of this study. OTA will address, however, when discussing specific maritime activities, what national security capabilities may be enhanced if the U.S. Merchant Marine benefits from such support. In addition, OTA will *not* evaluate pros and cons of free-trade policies but will discuss the direct consequences of expanding cabotage coverage in certain sectors, to the extent that analysis can clearly identify them. This report, then, will focus on clarifying those aspects of this complex debate that are subject to analytical treatment. Other arguments can be found in numerous past studies on the subject and in the several reports of the Commission on Merchant Maritime and Defense, itself.

Photo credit: Crowley Maritime Corp.

A U.S.-flag tug-barge vessel engaged in coastwise trade reserved for domestic operators only under current cabotage laws.

Chapter 3
Maritime Activities in the EEZ

For the purposes of this study, OTA has selected a number of important maritime industry sectors to review and to investigate what, if any, impacts may result from changes in current cabotage policies. These sectors were selected because they represent either a significant marine activity now in the EEZ or a significant potential activity because these sectors could be affected by and some proposed changes in existing cabotage policies. Table 1 lists the sectors.

OTA submitted its original list of EEZ activities to the Maritime Administration and requested its analysis and comments on the potential for U.S. industry and for the application of cabotage policies to those activities. The Maritime Administration (MARAD) prepared a paper discussing each sector and some of the specific cabotage applications and loopholes.[1] OTA asked the U.S. Customs Service to review the MARAD paper and received comments and suggested additions.[2] OTA also circulated the MARAD paper and list of activities to a broad group of industry representatives for comments. Both industry and government respondents agreed that the sectors in table 1, selected by OTA, were the proper ones for analysis.

Table 1—EEZ Maritime Activities Selected for Analysis

Commercial fisheries (selected activities)
Oil & gas exploration/development
Mobile drilling rigs
Service vessels/supply boats
Anchor handling boats
Launch barges/crane barges
Production platforms
Seismic survey boats
Commercial cruise vessels
Marine mining vessels
Dredging vessels
Waste disposal vessels
Icebreaking vessels
Offshore lightering
Vessels used in the Virgin Islands trade
Tankers/general cargo vessels
Passenger vessels/ferryboats
Trade in U.S. Pacific territories

SOURCE: Office of Technology Assessment, 1989.

The activities selected range from offshore oil and gas operations—a dominant industry in the EEZ with substantial investment in offshore facilities—to marine mining, a currently insignificant EEZ activity with uncertain potential. Also included is commercial fishing, with a long history of significant EEZ activity from Alaska to the Gulf of Mexico to Georges Banks, and waste disposal—a small activity at present with obvious growth potential. All of the selected activities could be affected by certain changes in cabotage policy, but OTA's analysis shows that some activities are already covered to a large extent by cabotage laws, and others represent only minor commercial potential.

These conclusions led OTA to divide the sectors into two groups. The first group contains four sectors—the Virgin Islands trade, offshore lightering, offshore oil and gas, and commercial cruise vessels. OTA concluded that these would be most vulnerable to changes in cabotage law. The four sectors are discussed and analyzed in the following section of this report. The remaining sectors would not be so affected and are thus just briefly discussed in the appendix to this report.

[1]"Extension of Cabotage to All Commercial Activities in the Exclusive Economic Zone," report prepared for OTA by the U.S. Maritime Administration, August 1988.

[2]Review of Maritime Administration report contained in letter to Peter Johnson, OTA, from B. James Fritz, Chief, Carrier Rulings Branch, U.S. Customs Service, Nov. 14, 1988.

Photo credit: Tropical Shipping Co.

Since the U.S. Virgin Islands trade is exempt from cabotage laws, this foreign-flag operator can compete for the business.

Chapter 4

Analysis of Four Maritime Sectors

VIRGIN ISLANDS TRADE

Current Activities and Trends

All trade with the U.S. Virgin Islands is exempt from cabotage laws until declared otherwise by Presidential proclamation (46 app. U.S.C. 877).[1] This has led a number of ship operators and others to employ foreign-flag vessels in trades there when it made economic sense

For example, about 8 percent of Alaskan North Slope crude oil is transported in noncoast-wise-qualified (foreign-flag) vessels to the Virgin Islands where it is refined and then the refined products are shipped onward to the U.S. mainland. An oil refinery on St. Croix receives crude oil shipments from both Alaska and overseas and produces oil products mainly for shipment to the U.S. east coast. As the Jones Act has been interpreted, both legs of the Alaska to Virgin Islands to U.S. east coast voyage are exempt from cabotage and may be accomplished with foreign-flag vessels because crude oil is considered to be manufactured or processed into a new and different product in the Virgin Islands.[2] If the coast-wise laws were changed and made applicable to the Virgin Islands, then both legs of this voyage would have to be in coast-wise-qualified vessels.

Because of the above possible effect on the petroleum trade in the Virgin Islands and because a number of other trades would be affected by changes in cabotage policies in this instance, OTA investigated some of the costs and benefits of such changes.

In addition to the petroleum trade, two other trades are a significant factor in the Virgin Islands—general cargo (mostly imports), and cruise (and passenger) shipping. The economy of the Virgin Islands is closely tied to these maritime activities. The major industry there is tourism and a large portion of tourists (about two-thirds in 1987) arrive via cruise ships. In addition, a whole range of general cargo and consumer goods must be brought to the Virgin Islands to support other sectors of the economy. Also, inter-island passenger movements are recently being served more and more by a fleet of high-speed ferries.[3]

As noted above, the Virgin Islands economy has benefited from having its maritime sector exempt from cabotage laws. The exemption allows the inter-island ferries to be foreign-built. It allows foreign-flag cargo ships to carry consumer goods from the U.S. mainland. And, it was a major factor in the decision by Hess Oil to build a large oil refinery there.[4]

Table 2 illustrates the current situation regarding the three major maritime trades. For the general cargo trade, it can be seen that part is shipped via Puerto Rico (where cabotage laws are applied)—usually aboard U.S. flag ships or tug-barge units; part is carried aboard foreign-flag vessels direct with mainland U.S. ports. One foreign-flag operator began offering direct service to the U.S. mainland in 1976 with a fleet of small, shallow-draft, roll-on/roll-off (Ro/Ro) vessels as well as some larger, heavy-lift ships uniquely suited to the Caribbean trade. This operation has grown and is considered highly efficient.

With regard to cruise shipping, all the major cruise ships calling at the Virgin Islands are foreign-flag and the 1.2 million cruise ship passenger arrivals in 1987 and 1988 is almost twice the number of arrivals in 1985. These passengers account for a major portion of the over $600 million in annual visitor expenditures estimated by the Virgin Islands Port Authority.

The petroleum trade shown in table 2 is also economically significant for the Virgin Islands. Table 3 shows the past 10-year trends in the refined product portion of this trade and the participation by U.S. and foreign-flag operators. In 1987 the petroleum product trade was about 60 percent of the tonnage shipped in 1977, and U.S.-flag vessels

[1]James B. Fritz, Chief, Carrier Rulings Branch, U.S. Customs Service, Review of Maritime Administration report contained in letter to Peter Johnson, OTA, Nov. 14, 1988.

[2]See *American Maritime Association v. Blumenthal*, 592 F. 2d 1156 (DC Cir. 1978), cert. den. 441 U.S. 943 (1979).

[3]"1988 Virgin Islands Port Authority Directory," Virgin Islands, 1988.

[4]Fritz, op. cit., footnote 1.

Table 2—Virgin Islands Maritime Trade

Freight (general cargo) services:
- All regular services: fully trailerized/containerized
- Part of service: is transshipped through Puerto Rico to U.S. mainland
  —two vessel sailings per week
  —three trailer barge sailings per week
- Part of service: direct to ports in Florida
  —six weekly sailings by roll-on/roll-off or lift-on/lift-off vessels
- In 1987: 1.1 million tons of general cargo was handled through Virgin Island ports

Passenger services:
- In 1987: 1.2 million cruise ship passenger arrivals (two-thirds of total tourists to Virgin Islands) on 1,300 cruise ship port calls

Petroleum trade:
- Principal trade is crude oil to the Hess Oil Refinery in St. Croix and oil products from it to the U.S. mainland.
- In 1988: Approximately 25 to 30 million barrels of oil were shipped in and out.

SOURCES: 1988 Virgin Islands Port Authority Director; *U.S. Trade With P.R. and U.S. Possessions*, Bureau of Census, FT800/May 1988.

carried about 44 percent of the tons shipped. The U.S.-flag participation in this trade has varied between 20 and 50 percent over the past 10 years. The crude oil shipments to the Virgin Islands is currently about 5.7 million tons per year and moves exclusively in large, foreign-flag tankers (21 to 28 voyages per year).

Impacts

If cabotage laws are applied to maritime trade with the Virgin Islands, there will obviously be impacts on both the island's economy and on ship operators either engaged in that trade or suddenly in a position to participate. The data available to OTA are not complete enough to make precise estimates of these impacts but can be used to make general conclusions.

Changes in any of the maritime sectors discussed above would affect the island's economy. Responding to an OTA inquiry, the Executive Director of the Virgin Islands Port Authority said "the loss of said [cabotage] exemption would have a devastatingly negative effect on the economy of the territory—we are totally opposed to such a concept."[5] Presumably the negative effects could include: increased costs of imported consumer goods, consequent increase in costs of tourist services, reduction in tourist arrivals from cruise ships, increase in cost of other passenger-vessel services, and increased costs of certain major industries such as the Hess Oil Refinery. If these cost increases are substantial, they could affect commercial decisions to locate in the Virgin Islands or to invest in future enterprises.

One U.S.-based ship operator who has benefited from foreign-flag vessels between the U.S. mainland and the Virgin Islands now employs over 250 people in the United States mainland and 110 in the Virgin Islands. This operator uses the Virgin Islands as a base for his network of Caribbean shipping service, which has seen substantial recent growth. Such an operation is a typical example of seafaring jobs apparently lost to foreign competition in exchange for benefits to a domestically owned firm who would usually employ U.S. citizens in most of the management and shore-based positions. This operator believes that he can offer a more efficient service in this way and, at the same time, contribute effectively to what he considers the U.S. maritime industry.[6]

Other firms, also engaged in the same type of trade with the Virgin Islands, take the opposite stand and would advocate changes in cabotage laws to include coverage of the Virgin Islands because they believe it to be in the best interests of the United States. They believe that such a change would put all ship operators serving the Virgin Islands on an equal competitive footing and that resulting economic impacts on the Virgin Islands would be minimal.[7]

A very rough estimate of seagoing jobs involved with two of the Virgin Islands trades—petroleum products and general cargo service—can be made with available data. For the petroleum products trade, the Maritime Administration estimates that existing U.S.-flag operators employ about 100 in seafaring jobs and that these firms carry just under one half of the trade.[8] Therefore, if all trade was in U.S.-flag vessels, 100+ new jobs would be created for U.S. seamen. There is also a possibility of

[5]John E. Harding, Executive Director, Virgin Islands Port Authority, letter to Peter Johnson, OTA, Oct. 19, 1988.

[6]Eugene A. Yourch, Executive Secretary, Federation of American Controlled Shipping, to Peter Johnson, OTA, Oct. 26, 1988.

[7]Jack M. Park, Vice President, Crowley Maritime Corp., to Peter Johnson, OTA, Dec. 29, 1988.

[8]U.S. Maritime Administration, "Extension of Cabotage to All Commercial Activities in the Exclusive Economic Zone," report prepared for OTA, August 1988.

Table 3—Summary of Ship Voyages in the Virgin Islands/U.S. Refined Petroleum Product Trade, Calendar Years 1977-87

Year	Tonnage index[a]	Tonnage by flag (percent)		Number of vessels in trade (voyages)	
		U.S.	Foreign flag	U.S.	Foreign flag
1977	1.00	(26)	(74)	53 (180)	154 (534)
1978	0.99	(20)	(80)	50 (200)	127 (598)
1979	0.94	(41)	(59)	71 (277)	112 (419)
1980	0.80	(48)	(52)	59 (222)	64 (373)
1981	0.77	(31)	(69)	46 (150)	139 (431)
1982	0.68	(29)	(71)	24 (124)	126 (323)
1983	0.62	(43)	(57)	17 (159)	89 (228)
1984	0.63	(51)	(49)	27 (154)	58 (207)
1985	0.58	(47)	(53)	34 (175)	80 (191)
1986	0.49	(48)	(52)	21 (140)	76 (168)
1987	0.60	(44)	(56)	27 (165)	88 (220)

[a]1977 tonnage used as base.
NOTE: This table does *not* include crude oil shipments from Alaska to the Virgin Islands, all of which takes place in foreign-flag vessels.
SOURCE: Department of the Treasury, U.S. Customs Service, Bills-of-Ladings Covering Shipments.

additional U.S. seafaring jobs if crude oil shipments from Alaska to the Virgin Islands were subject to cabotage laws. For the general cargo trade, the current operators of foreign-flag vessels with a total of about six weekly sailings would probably require somewhat less than 100 seafaring jobs, and these may be translated, under the right circumstances, to new jobs for U.S. seamen. The data for cruise vessel operations are not sufficient to make similar partial conclusions.

OTA concludes that relative costs and benefits to different sectors of the economy due to changes in the Virgin Islands cabotage laws would not lead to clear support for any one position. It is not even clear that extension of cabotage to the Virgin Islands would result in a substitution of U.S. flag-ship operations for current foreign-flag operations—the economics could force other options (such as merely a reduction in refinery throughput). If the results were the employment of U.S.-flag substitute vessels, these vessels would be a militarily useful type (e.g., product tankers and heavy lift or roll-on/roll-off cargo ships) and could benefit national security. However, at least one foreign-flag operator points out that, as a U.S. based and owned company, his vessels could also be enlisted to meet defense sea-lift requirements.

OFFSHORE LIGHTERING

Current Activities and Trends

The United States imports over 7 million barrels per day of crude oil and petroleum products to serve the Nation's energy demand.[9] Many of these imports come from countries in the Middle East or Africa where long transport distances favor the use of very large tankers that, because of their deep draft, cannot enter U.S. ports. It has become common practice to transfer the oil from the large tankers to smaller ones offshore and then bring the oil in these smaller tankers to ports on the U.S. gulf or Atlantic coasts where major refineries or terminals are located. This type of operation is known as "lightering." In recent years, about 100 foreign-flag shuttle tankers have been engaged in these lightering operations in U.S. offshore waters.[10] Other kinds of offshore lightering operations have also been done with foreign-flag vessels on a much smaller scale. Some in the U.S. maritime industry have argued that vessels engaged in lightering within the EEZ should be subject to cabotage laws.

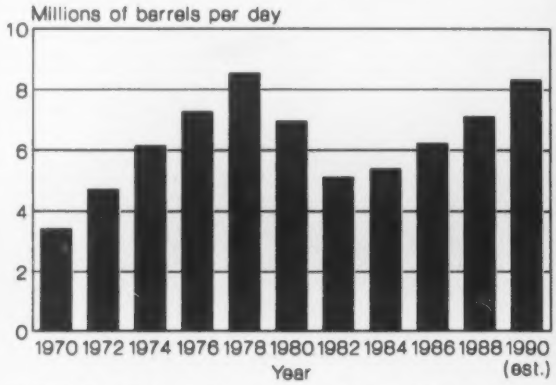
Under present law, if the above lightering of imports is done within U.S. territorial waters (now a 3-mile zone), the shuttle tankers must be coast-wise-qualified (U.S. flag). However, if the lightering takes

[9]U.S. Department of Energy, Energy Information Office, "Annual Energy Outlook 1989, With Projections to 2000," Washington, DC, 1989.
[10]U.S. Maritime Administration, op. cit., footnote 8.

Photo credit: OMI Petrolink Corp.

An offshore lightering operation using foreign-flag shuttle tankers to unload larger vessels in the EEZ and transport oil to U.S. ports. Cabotage laws do not apply to these vessels.

Figure 1—U.S. Oil Imports, 1970-90



SOURCE: Office of Technology Assessment, Energy Information Office, Department of Energy, 1989.

place outside territorial waters, they may be foreign-flag. Crude oil importers and others have found it economically beneficial to employ foreign-flag lightering vessels and conduct the lightering outside U.S. territorial waters. If cabotage laws were extended to cover these operations within the EEZ, it could have the effect of requiring the use of U.S.-flag vessels or force the operators to alter their practices to avoid such restrictions.

Oil imports to the United States peaked in 1977 and then decreased until 1983 when they began to grow again. As shown in figure 1, 1988 imports averaged 7.1 million barrels per day and by 1990 projections indicate imports to be about 8.3 million barrels per day—approaching the record highs of the late 1970s. The Department of Energy's most recent forecast is for imports to grow to 11 million barrels per day by 2000.

U.S. imports are from a variety of foreign sources. Those that influence offshore lightering activity are generally from the Middle East and Far East, where voyage distances make it most economical to use very large crude carriers (VLCCs) and ultra large crude carriers (ULCCs). Figure 2 shows that, in 1980, over 35 percent of imports were in that category, while the 1985 percentage had decreased to 20 percent but is rising again. Generally, as total imports grow, so will the share of imports from the Middle East because that region has, by far, the greatest capacity for production growth.

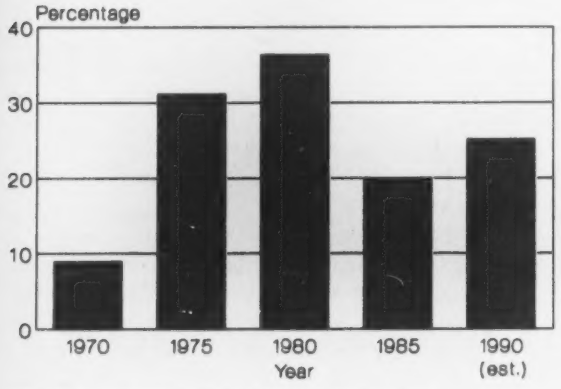
These factors point toward current and future growth in offshore lightering as a likely trend. Fearnleys indicates that, in 1987, 20 percent of oil imports to the United States were in vessels over 200,000 deadweight tons (dwt).[11] These vessels would have to be lightered unless they used an offshore port to unload. If imports actually grow to 11 million barrels per day by 2000, and assuming 20 to 30 percent of these imports are in VLCCs or ULCCs, the market for offshore lightering could double by 2000—from about 1 million barrels per day in 1988.

The American Institute of Merchant Shipping reported to OTA that approximately 80 to 90 foreign-flag tankers in the 80,000 dwt range periodically engage in offshore lightering.[12] These vessels lighter crude oil from VLCCs and ULCCs, carrying crude from the Persian Gulf and West Africa to the U.S. east and gulf coasts. The lightering is generally done 60 miles or more offshore. Most of the

[11] *World Bulk Trades, 1987* (Oslo, Norway: Fearnleys, November 1988).

[12] Ernest J. Corrado, President, American Institute of Merchant Shipping, Washington, DC, letter to Peter Johnson, OTA, Oct. 31, 1988.

Figure 2—Percent of U.S. Oil Imports From the Middle and Far East



SOURCE: Energy Information Office, Department of Energy, 1989.

Table 4—Vessels Engaged in U.S. Offshore Lightering, 1987

Area of operation registry	Number of vessels	Number of voyages
North Atlantic coast:		
Liberia	7	11
Panama	2	5
Bahamas	2	4
Greece	1	2
Singapore	1	1
Subtotals	13	23
Gulf coast:		
Liberia	41	534
United States	19[a]	55[b]
Panama	15	51
Bahamas	10	185
Japan	5	31
Greece	5	13
United Kingdom	3	5
Singapore	3	4
Cyprus	2	15
France	2	3
Subtotals	105	896
Pacific coast:		
Panama	1	1
South Korea	1	1
Japan	1	1
Bahamas	1	1
Poland	1	1
Subtotals	5	5
Totals	123	924

[a]Includes 9 barges.
[b]Includes 16 barges.

SOURCE: Maritime Administration, 1988.

foreign-flag tankers used in the lightering service are chartered in the spot market after delivering a long-haul cargo to a U.S. port. Many of the vessels are secured for only one lightering operation of 3 to 4 days, or until they can contract another long-haul cargo. Although several lightering vessels are maintained by some companies on long-term contract, there is generally insufficient lightering business to support their operation full time. Consequently, while waiting for lightering business, the vessels undertake short voyages, typically delivering crude oil from Mexico to the U.S. gulf coast.

This estimate is supported by data collected and analyzed by the Maritime Administration (MARAD) who reported that in 1987, 110 tankships, ranging from 4,900 to 136,800 dwt, were engaged in offshore lightering. MARAD's Office of Trade Analysis and Insurance, Division of Statistics, receives computer tapes from the Bureau of the Census which it uses to generate reports of individual landings by each shuttle vessel. Table 4 summarizes these data for 1987. It shows the total number of foreign-flag tankers, by registry, area of operation, and number of lightering voyages for 1987.

The focus of this lightering activity is in the gulf coast. The North Atlantic and Pacific coasts are a distant second and third. The industry has reported to OTA that lightering appears to be a good business opportunity in the gulf coast. One west coast operator, however, did *not* see lightering as a profitable opportunity.[13]

One of the major lightering firms in the gulf reported the following to OTA:

> The Persian Gulf Oil share of imports has been increasing. It generally arrives in very large crude carriers (VLCCs) and ultra large crude carriers (ULCCs), from 250,000 deadweight tons to 500,000 deadweight tons. These vessels draw from 70 to 90 feet of draft when fully laden and cannot approach closer to the U.S. gulf coast line than about 50 to 60 miles because of the shallow water along the coast. Most U.S. gulf ports cannot accommodate vessels drawing more than 40 feet fresh water, except for Corpus Christi, Texas, which can take 45 feet fresh

[13]Yourch, op. cit., footnote 6.

water. However, most VLCCs and ULCCs are too large to enter port, regardless of draft considerations.

These vessels are lightered by a series of smaller ships of about 80,000 deadweight tons each. The VLCC is lightered of its cargo after which it proceeds back to load another cargo. It does not enter a U.S. port.

West African oil typically arrives in vessels of about 140,000 deadweight tons capacity. These vessels will lighter off only enough cargo to enable them to reach 40 feet draft, after which they enter port to pump off their remaining cargo.

Most of the lightering vessels used in the Gulf of Mexico are chartered in the spot market. These ships have usually just delivered a cargo to a U.S. Port and accept lightering business only until they can fix another long haul cargo. Typically, lightering vessels are fixed for a period of from 3 days upwards to a term commitment of 30 or 60 days. Many vessels are fixed for only one lightering operation or about 3 to 4 days.

The availability of numerous foreign ships that have completed their voyages in the U.S. gulf coast ports helps to make lightering economically viable. Although we maintain one or two vessels on long term contract, there is often insufficient lightering business to support their operation so that suitable short distance voyages must be found to fill the gap.[14]

The Cost of Lightering

It is difficult to determine the cost of these lightering operations because detailed and comprehensive industry data are not available and MARAD has not prepared independent estimates. From discussions with industry representatives, OTA believes that about two-thirds of offshore lightering is done by independent operators (contractors) and one-third is done by major oil companies for their own account. One independent operator reported to OTA that current lightering costs were about $0.17 to $0.22 per barrel including vessels and equipment. Another reported that the *added* costs of moving a lightering operation from (about) 50 miles offshore to 200 miles offshore would be about $0.07 per barrel, but the *added* cost of lightering (at 50 miles) using U.S.-flag vessels as opposed to foreign-flag vessels would be about $0.16 per barrel.

Seafaring Jobs

The number of seafaring jobs associated with foreign vessels in lightering operations can only be roughly estimated from the limited data available. Table 4 shows about 100 foreign-flag vessels engaged in lightering in 1987 and over 900 voyages. If you assume 5 to 7 days per voyage, including down time and an average of 20-person crews for each vessel, then about *250 to 350* seafaring jobs would be involved. Another way to estimate seafaring jobs associated with lightering, confirming the above, is as follows: One lightering operator reported to OTA that 3 of their vessels would transport somewhat over 100 million barrels per year. At current lightering rates and 20-person crews, this translates into about 200 seafaring jobs.[15]

Other Lightering

While not on the same scale as oil imports lightering, other lightering of vessels too large to enter U.S. ports also takes place. Many of these operations involve exports of bulk cargo. Large bulk carriers used in the U.S. export of grain and coal from east coast and Gulf of Mexico ports often cannot be fully loaded at dock and are fully loaded offshore using lightering barges or vessels. In addition, when developed harbors are not available, such as in the case of a new mining operation in northern Alaska, the product is transferred from shallow-draft barges to deep-draft bulk carriers offshore. OTA has no data on the extent of foreign operators in these trades, but it is considered minor at present.

Impacts

The extension of cabotage laws to any offshore lightering activity within the 200 EEZ would undoubtedly have a major impact on the petroleum lightering industry. If these operators switched to the use of (coast-wise-qualified) U.S.-flag vessels, the demand for U.S.-built tankers and U.S. operators would increase. Considering the above estimates of lightering volume, the resulting demand would be approximately the equivalent of eighteen 80,000 dwt

[14]Robert Carson, OMI Petrolink Corp., Houston, TX, letter to Peter Johnson, OTA, Feb. 8, 1989.

[15]Ibid.

shuttle tankers and 200 to 350 seagoing jobs. In comparison to the existing Jones Act fleet, this is over 18 percent of the tanker tonnage and about 9 percent of the jobs.

In reality, however, more numbers of tankers and personnel are used in current operations than are needed because operators follow the practice of "voyaging out" to short Mexican or Caribbean trades to fill the time lost waiting for lightering trips. It is difficult to envision higher cost U.S.-flag vessels finding employment in short foreign trades and, therefore, U.S.-flag lightering operations may experience large amounts of down time.

The most likely consequence of extending cabotage laws to lightering in the EEZ, however, would be a move by shippers to another alternative—*not* employing U.S. vessels. Several, in the industry, reported to OTA that there are a number of alternatives much more attractive, economically, than using U.S.-flag vessels for lightering.

Even the American Institute of Merchant Shipping (AIMS), one of the foremost proponents of the Jones Act, made the following statement:

> Rather than investing in new U.S.-flag tankers if the Jones Act were extended to the EEZ to cover lightering, numerous alternatives could be used. First, and most probable, the lightering operations would move beyond the EEZ. It is simply more economical to continue lightering further offshore than to invest in new Jones Act qualified tankers. Second, crude oil could be imported in smaller crude carriers that do not require lightering. Third, deepwater ports such as the Louisiana Offshore Oil Platform (LOOP) could be built to accommodate the larger crude carriers without lightering. Fourth, transshipment terminals in the Caribbean area could be used in lieu of lightering. Therefore, although AIMS is one of the foremost proponents of the Jones Act, we do not favor its extension to cover lightering activities within the EEZ because no new trades for U.S. flag vessels would be created and the cost of oil to U.S. consumers would be increased.[16]

OTA concludes that an extension of cabotage law to include lightering operations within the EEZ would not result in substantial incentives to build and operate U.S.-flag shuttle tankers for this trade. A more likely result would be changes that would be less costly (such as lightering beyond 200 miles) and would still employ foreign vessels. These changes would extract a cost—increases in lightering costs may range from 25 to 50 percent (or from $0.05 to $0.10 per barrel). And, these costs would normally be passed to the consumer.

OIL AND GAS EXPLORATION AND DEVELOPMENT

Current Activities and Trends

The offshore oil and gas industry has become a significant marine activity in U.S. offshore waters over the past 25 years. While oil and gas exploration has taken place in all regions of the EEZ, the most significant regions today (and the only EEZ regions with petroleum production) are the Gulf of Mexico and offshore California.

A variety of types and sizes of vessels are engaged in offshore oil and gas activities. These include: mobile drilling rigs; production platforms and facilities; supply vessels; tugs and other support vessels; seismic vessels and various barges for pipe laying; launching structures; and other work. During 1988, about 250 mobile drilling rigs were located in U.S. offshore waters. In addition, over 900 U.S. flag supply vessels and other support craft were available in 1988, and most of them were in U.S. waters. Over 3,500 oil and gas production platforms are installed in the Gulf of Mexico and 20 large platforms are operating in the Pacific EEZ.[17]

Only the transportation aspect of this industry is covered under current cabotage laws that require U.S. built and operated vessels. However, the Outer Continental Shelf Lands Act (OCSLA) extends the laws of the United States to the subsoil and seabed of the OCS and to all installations and other devices permanently or temporarily attached to the seabed for the purposes of exploring for, developing, or producing resources of the seabed.[18] The effect of that

[16]Corrado, op. cit., footnote 12.

[17]U.S. Congress, Office of Technology Assessment, "An Analysis of Buy-America Proposals for Offshore Drilling Rigs and Production Facilities," OTA staff paper, Washington, DC, June 1988.

[18]The Outer Continental Shelf Lands Act of 1953, as amended (43 U.S.C. 1333(a)).

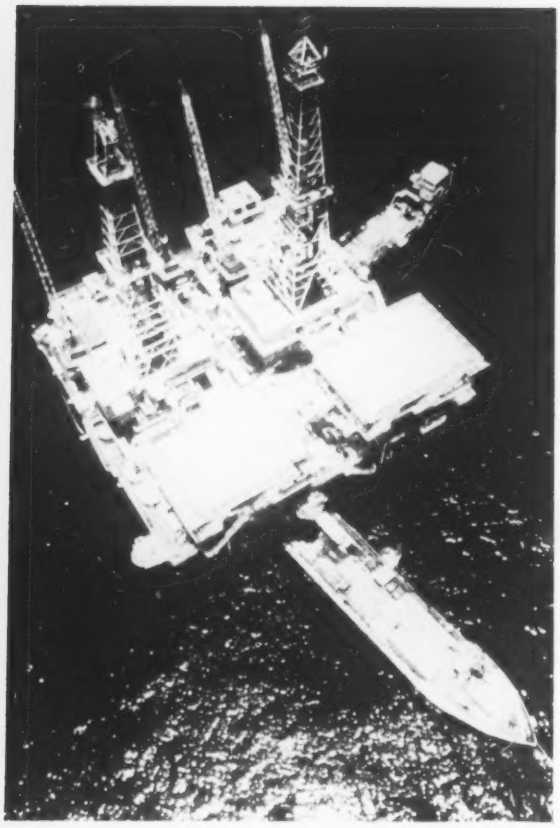


Photo credit: Shell Oil Co.

This supply ship must be U.S.-flag to be used in transportation from a U.S. port to this offshore platform on the Outer Continental Shelf under current cabotage laws.

extension is to make all drilling rigs, production platforms, and any other installation that is in contact with the seabed (anchored and/or resting on the bottom) equivalent to "points in the U.S. under the cabotage laws." When these platforms or installations are defined as "points in the U.S.," any coast-wise trade with these points becomes subject to the provisions of the U.S. cabotage laws. One notable exception to this definition of "points in the U.S." is: a point on the OCS where there is no installation or device or artificial island (i.e., a "pristine site") is NOT considered a coast-wise point. Consequently, for example, a drilling or production platform may be transported from a U.S. port to a "pristine site" on the OCS and the transportation vessel would not be subject to cabotage laws.[19]

All transportation of merchandise or passengers between OCS sites considered to be "points in the U.S." as defined in the OCSLA, or between these points and any other U.S. points, must take place in U.S. built, owned, and coast-wise-documented vessels. Of the various types of vessels employed in offshore oil activities, the ones most commonly involved in the coast-wise trade as defined above are tugs, supply boats, crew boats, and most launch barges. Exceptions to this policy for certain launch barges, however, have been enacted into law.

In contrast to the above, vessels engaged in nontransportation activities in the offshore oil industry (drilling rigs, seismic vessels, anchor handling vessels, crane barges, production platforms, etc.) are not subject to cabotage if they do not engage in transportation.

If cabotage policies were extended to cover all transportation activities within the EEZ, the effect on the offshore oil and gas industry would be minimal except for the case where movements of rigs, equipment, or platforms to "pristine sites" are concerned. As stated above, U.S. Customs Service interpretations of the OCSLA excludes "pristine sites" from its definition of "points in the U.S." The same would hold true for points on the high seas not presently considered "points in the U.S." It should also be noted that, if cabotage laws are amended, consideration should be given to also amending the OCSLA because there is a difference in the definitions of coast-wise locations between the concept of the OCS and that of the 200-mile EEZ.

There could be a substantial impact on the offshore oil and gas industry, however, if cabotage policies were extended to cover all activities in this sector, not just those involving transportation. The fleets of vessels possibly affected could include offshore platforms, mobile drilling rigs, seismic vessels, anchor handling vessels, and others. While many of these are now U.S. owned and operated, there is no requirement for them to be. Many U.S. vessels of these types also operate around the world

[19]Fritz, op. cit., footnote 1.

and in the coastal waters of other nations. The ownership and registry mix of such vessels operating in the U.S. EEZ, as well as the EEZ of other nations, can vary substantially over time, and it is difficult to make an accurate projection of this mix.

To a large extent, the questions of cabotage law extension to include the two principal offshore oil and gas sectors *not* engaged in transportation are addressed in a recent OTA staff paper, *An Analysis of Buy-America Proposals for Offshore Drilling Rigs and Production Facilities*, published in June 1988.[20] That report also included a review and outlook of the U.S. offshore oil industry. Some pertinent findings from that OTA report are:

- *Trends*—U.S. rig and platform builders have experienced serious reductions in their business over the past 5 years caused mainly by a major slump in offshore oil and gas exploration and development work, though overseas competition for the construction of rigs and platforms has continued to grow. Substantial foreign content is now evident in some of the largest and most technically advanced equipment.
- *Outlook*—There is a reasonable indication of a gradual upturn in U.S. offshore oil and gas exploration and development activities over the next few years and of a recovery from the extremely low levels of 1987. The Gulf of Mexico is the region with the greatest near-term potential for increased OCS activity.
- *Mobile Drilling Rigs*—At the present time, no mobile drilling rigs are being constructed in the United States, and only a few are being built overseas (Far East shipyards). The oversupply of mobile drilling rigs in the world fleet makes it unlikely that new rig construction activity will soon revive. Near-term rig construction potential in the United States appears to be focused on upgrading or modifying existing rigs and in building a few specialized designs for deepwater or harsh environment applications.
- *Production Platforms and Facilities*—Using a number of assumptions about future OCS development investment, OTA projected that between $130 million and $650 million per year will be invested in OCS platform and facility fabrication over the next decade. The possibility of foreign construction of those platforms could have the effect of putting at risk several thousand direct labor jobs in the U.S. fabrication industry—one of a number of important industry sectors engaged in OCS development. A significant number of indirect and induced jobs would also be affected. The jobs most at risk appear to be those associated with construction of deepwater production systems—employing the more advanced technologies and representing about one-half of the future market.

Geophysical Survey Vessels

Considering the above observations and the present status of cabotage coverage in offshore oil and gas activities, one other sector could be subject to analysis—geophysical survey vessels.

In reply to an OTA inquiry, the International Association of Geophysical Contractors (IAGC) conducted a survey of its members and compiled the following information on current activities and trends in the industry. In general, members consider the condition of the industry operating in U.S. offshore waters to be poor and the outlook to be for no growth until oil prices rise significantly.[21]

About 30 geophysical survey vessels are now operating in U.S. waters and the operators employ approximately 600 persons in seagoing positions aboard those vessels. This is an international industry and those same companies operate over 40 vessels in foreign waters and employ over 2,700 persons in both merchant marine and scientific positions aboard a total of 71 vessels. The IAGC survey indicated that 82 percent of the persons employed aboard seismic vessels in the EEZ in November 1988 were U.S. nationals.

The vessels currently operating have been built in both the United States and abroad—60 percent of those in U.S. operations have been built in the United States. A considerable amount of U.S.-manufactured scientific equipment is used aboard these survey vessels, even if built abroad. The range

[20]OTA, op. cit., footnote 17.

[21]Nathan S. Bergerbest, Counsel to the International Association of Geophysical Contractors, letter to Peter Johnson, OTA, Dec. 19, 1988.

of replacement costs for these vessels, including scientific gear, is from $7 million to $14 million each.

A specific exclusion from cabotage laws for geophysical survey vessels is provided under the Oceanographic Research Vessel Act (ORVA - 46 U.S.C. app. 441-445, see sec. 443).

Impacts

The direct effects of extending cabotage law to the U.S. offshore oil and gas activities not now covered would vary depending on the specific activity.

Drilling Rigs and Platforms

Many proponents of extending cabotage to offshore oil and gas activities do not include drilling rigs and platforms in the same category because they have historically been considered outside of the traditional maritime industry. If they were included, however, the impacts would most likely be the same as those considered in the OTA "Buy America" study.[22] In that study OTA found strong disagreements about the effects of implementing "Buy America" legislative proposals for OCS vessels, platforms, and facilities but reasonable agreement about industry trends without such legislation. Existing U.S. platform fabricators—the one industry segment that OTA investigated in detail—remain viable and competitive in the Gulf of Mexico region but face an uncertain future in the face of low-cost, Far East competition. Current trends indicate a growing international participation in all aspects of OCS development activities that probably can only be deterred by some form of government intervention. The remaining question is the general policy question about the nature and extent of government intervention that can be justified by a threatened direct loss of jobs in one industry sector compared to a range of less quantifiable but possibly significant negative effects in other sectors of the economy.

Restrictions on low-cost foreign construction for OCS development projects, as "Buy America" proposals suggest, could have both positive and negative effects on different sectors of the industry. Platform fabricators believe it would result in saving U.S. jobs. Major oil companies believe it would result in discouraging investment in some major projects because of unreasonably high development costs. OTA's analysis indicates that in some cases, the cost of the platform could make the difference between a profitable project and an unprofitable one. In other cases a higher cost platform would reduce but not eliminate profitability and in still others even a lower cost platform would not make a project profitable. If OCS projects are discouraged it could have a negative impact on many other sectors of the offshore industry.

There is also a more general and philosophical controversy about "Buy America" legislation. Opponents contend that any restraint of free trade has disadvantages to the United States—especially to consumers. They also point out that domestic content regulations invite retaliation by foreign entities and could affect U.S. exports. Proponents contend that U.S. firms have already lost significant market shares and will not survive in direct competition with countries with very low wage rates and subsidies. They also point out that many foreign governments already protect their domestic industries with similar restrictive measures.

Geophysical Vessels

Operators of geophysical survey vessels have problems and points of view similar to those of mobile drilling rig operators. Since they are involved in an international industry they too are concerned with access to foreign waters and the possibility of retaliation if the United States were to restrict foreign access to our waters. There is also a general downturn in the industry and an oversupply of vessels. Any policy that would increase costs for operators could affect their ability to obtain future business. Operators also note their close association with oceanographic research vessels and the need to maintain an international understanding of freedom for operations and access in the name of scientific research.

The benefits of extending cabotage law to geophysical vessels, in the short term, would most likely be some increase in seagoing jobs on those vessels operating in the EEZ. According to IAGC data, only 20 percent of those positions (roughly 600 in all) are occupied by non-U.S. nationals at present. It is unclear how the industry might restructure to

[22]OTA, op. cit., footnote 17.

comply with cabotage laws because so many operators conduct worldwide operations with significant flexibility of movement of vessels worldwide. Respondents to the IAGC survey indicated that some may split their fleets between U.S. and foreign operations and others might concentrate exclusively on foreign operations.

The longer term question of new vessel construction in the United States, if cabotage laws were applied, is very difficult to judge. Present demand for geophysical survey work in U.S. offshore waters is low and vessels are in oversupply. New buildings would follow growth in the U.S. offshore industry, but current prospects indicate that will be very slow.

Other Vessels

A number of special-purpose vessels are engaged in support activities in the offshore oil and gas industry. Those strictly engaged in transportation are usually covered by U.S. Customs Service interpretation of "points in the United States"—but there have been exceptions. The exceptions stemming from Customs Service rulings about pristine locations have been of concern to some in the maritime industry. Other exceptions have been made (such as in the case of launch barges) by special laws because only a foreign vessel claimed to have the unique capability required.

It may be possible to avoid some technical exceptions if cabotage were extended to all transportation activities in the EEZ, but the unique capability problem may still remain. The Customs Service warns, however, that confusion may still prevail because the EEZ, by definition, extends out 200 miles while the extent of the OCS could be more or less in specific regions. The lawyers will have to work on this one.

Finally, one operator, responding to the OTA inquiry, advocates extending cabotage to icebreaking services in connection with OCS operations.[23] The future need for commercial icebreaking services will probably depend on the outlook for OCS development in the Arctic. At present no economically significant oil field has been discovered here, but exploration continues in some regions with heavy ice cover. If a discovery is made, icebreaking support will likely be part of a future development, and cabotage coverage for these vessels could benefit U.S. builders and operators. This is a very specialized business sector and, while foreign builders and operators could likely compete very well, the added costs of a U.S. requirement could only be determined on a specific-case basis.

COMMERCIAL CRUISE VESSELS

One of the more healthy and growing segments of the maritime industry is the commercial cruise vessel industry. Small commercial cruise vessels, ferryboats, and various other passenger craft now operate in domestic U.S. voyages and under the current policies of cabotage. However, major cruise vessels operating in the Caribbean and from the U.S. west coast to foreign ports are foreign built and operated ships. This is a very large industry, and it mainly serves the American tourist. Almost 3 million U.S. cruise vacationers depart from Florida and other ports annually, and the major carriers are in the process of building a significant number of large and luxurious vessels for this market.

Under current Customs Service policy, foreign-flag cruise vessels are permitted to embark passengers in a U.S. port, carry them on a cruise itinerary that includes one or more U.S. ports and at least one foreign port, and return them to the original port. If the interim foreign port is what the Customs Service has defined as a "distant foreign port" (i.e., outside of North America, Central America, and the Caribbean), then the passengers may disembark at a U.S. port other than the port of embarkation.[24]

Foreign-flag cruise vessels are also permitted to operate on a short, closed-loop voyage from a U.S. port and back to the same port with no intermediate ports calls, if the vessel proceeds beyond U.S. territorial waters (now a 3-mile zone). This type of voyage is commonly known as a "cruise to nowhere" and is very popular in the cruise industry. In many cases the vessels in this business also offer gambling to the passengers as an added feature. A "cruise to nowhere" entirely within U.S. territorial waters is prohibited to a noncoast-wise-qualified vessel.

[23]Park, op. cit., footnote 7.

[24]Fritz, op. cit., footnote 1.

Photo credit: American Canadian Caribbean Line, Inc.

This small U.S.-flag cruise ship is protected from foreign competition under current cabotage laws when operating between U.S. ports, but not when operating from a U.S. to foreign port.

A variety of proposals could be made to extend the concept of cabotage policy to cover certain operations of this cruise shipping industry. One of these could be to define the 200-mile EEZ as the zone that a "cruise to nowhere" would need to proceed beyond if it were made in a foreign-flag vessel. This would have the practical effect of requiring U.S. built and operated ships for this trade. Other changes that could be made include: revoking the current eligibility of foreign-flag vessels to carry passengers between the U.S. mainland and Puerto Rico in the absence of service by a qualified U.S.-flag vessel; requiring a foreign port call in any "cruise to nowhere"; not allowing the above mentioned "distant foreign port" exception; and a number of other possibilities. Because the cruise industry is significant and growing, there have been a number of proposals to extend cabotage policies to certain segments of it.

Status and Trends

The North American cruise industry has been defined to include vessels operating from North American ports principally serving the U.S. market; offering cruises ranging from 1-day round trips to 7-to 14-day Caribbean cruises, to transatlantic crossings on the Queen Elizabeth II. In a recent industry publication, the business status and outlook was described as follows:

> By the end of 1988, there were 118 cruise vessels sailing mainly from North American ports, offering some 79,933 berths for sale in the American market. Three million Americans are expected to cruise during this year, with most sailing in the Caribbean from ports in southern Florida.
>
> Since its modern-day inception in the United States some 20 years ago, the cruise industry has grown to a $4-billion-a-year business, generating significant revenue for local governments, and employment and business opportunities for travel agents, ports, airlines, and a vast array of service and supply companies.
>
> The cruise industry is also increasingly making its presence known to the American public through print and national network television advertising.
>
> Industry forecasts promise an expansive future with new ships on order or in the planning stages, and port developments projecting strong growth in the cruise berth capacity over the next 5 years.[25]

Of course, some analysts urge caution in accepting too rosy an outlook. Cruise operations are part of the larger tourist industry where demand is affected by consumer behavior as well as the general economy. Cruising is not considered a mature industry and some operators may overextend their projections and create an oversupply of vessels. In general, however, continued growth in cruising is likely with some uncertainty about market and price fluctuations. Recent analyses show the following:

- *Growth Projections*—Cruise market growth projections vary. There is presently overcapacity and most cruise lines operate at less than 85 percent of capacity utilization. With 11 percent capacity growth in 1988, the gap between supply and demand in the cruise market can be expected to widen. However, as

[25] "The North American Cruise Industry, 1988," *Cruise Industry News*, New York, NY, May 1988, p. 11.

berth capacity growth is reduced to an average of about 8 percent annually over the next 4 or 5 years, the gap may remain constant.

- *Market Concentration*—The most popular sailing region is the Caribbean, with mainly 7-day cruises originating from Miami, but also from Fort Lauderdale, Tampa, and San Juan, as well as from Cape Canaveral, New Orleans, Jamaica, and Barbados.

  More than 30,000 berths, or 45 percent of the total berth capacity in North America, are offered year-round in the Caribbean. In the winter season, more than 45,000 berths are offered, or nearly 60 percent of the market.[26]

With the exception of U.S. coastal and inland operations, the U.S.-flag sector of the cruise industry is principally within Hawaii. The berth capacity for this sector with one operator is about 1,600, or about 2 percent of the total. Another operator entered this trade in 1988 with one ship and 600 berths, but early in 1989 they filed for bankruptcy. This was the only growth projected by the industry for the next 5 years.

The west coast to Alaska summertime cruise trade has become a strong market sector in recent years but, because of U.S. cabotage law restrictions, almost all of the industry has chosen to use foreign-flag vessels and operate out of the Canadian port of Vancouver rather than be required to operate U.S.-flag ships.

Tables 5, 6, and 7, taken from a current industry evaluation, show the cruise vessels that may be introduced to the North American market through 1992. All of these vessels are planned to be foreign built and—with one exception—all will operate in trades exempt from U.S. cabotage laws. If the scenario in table 7 holds, the total growth in vessel berths over the next 4 years would be over 50 percent.

Table 5—New Cruise Ships Entering The Market, 1988-91 (Based on confirmed orders)

Year	No. ships	Market	Total berths confirmed
1988 (est.)	12	5-Caribbean 4-World 2-Mexico 1-Hawaii	7,568
1989 (proj.)	8	6-Caribbean 2-Unknown	4,560
1990 (proj.)	10	7-Caribbean 2-Mexico 1-Unknown	8,470
1991 (proj)	4	3-Caribbean 1-Unknown	5,150

SOURCE: Cruise Industry News, 1988.

Table 6—Additional New Cruise Ships Entering The Market, 1990-92 (Based on cruise lines perceived needs)

Year	Additional no. ships	Market	Additional total berths
1990	5	3-Caribbean 1-World 1-Unknown	2,800
1991	6	5-Caribbean 1-World	8,500
1992	7	6-Caribbean 1-World	14,200

SOURCE: Cruise Industry News, 1988.

Table 7—Scenario Projections

Confirmed new berths	Total	Maximum scenario growth	Total berths
1987: NA	72,365	NA	72,365
1988: 7,568 (10.5%)	79,933	7,568 (10.5%)	79,933
1989: 4,560 (5.5%)	84,493	4,560 (5.5%)	84,493
1990: 8,470 (10%)	92,963	11,270 (13%)	95,763
1991: 5,150 (6%)	98,113	13,640 (14%)	109,403
1992: 0 (0%)	NA	14,212 (13%)	123,615

NA = not applicable.
NOTE: If the maximum growth scenario should materialize, it means that the projected growth rate of the industry would vastly exceed that based on confirmed orders.
SOURCE: Office of Technology Assessment, 1989.

Impacts

It is difficult to envision all of the possible forms of cabotage extension to the cruise vessel industry because the nature of the tourist business itself is so directly integrated into the aspect of ship operations. The fact that Miami is such a major airline traffic hub, as well as a destination for millions of tourists in general, has contributed to the growth of the cruise port there. If cruise vessel operators out of Miami were faced with compliance with cabotage laws, they would undoubtedly seek alternatives—perhaps following the practice in the Pacific Northwest

[26]Ibid.

where passengers are transferred from the airport in Seattle to a cruise ship docked in Vancouver.

It may not be unreasonable, however, to consider a segment of the cruise industry—the "cruise to nowhere"—as a possible candidate for cabotage extension. This small, but significant, market is represented by several operators of 1-day cruises out of Florida ports. A recent industry study shows that 2 firms now operate 5 vessels with 4,300 berths in this segment. This represents about 5 percent of current industry capacity.[27]

Assuming about five vessels and 5 percent of the cruise market is represented by cruises to nowhere, a scenario for U.S.-flag, U.S.-built vessels could be postulated if cabotage laws covered these vessels.

In a 1987 study comparing U.S.-flag and foreign-flag cruise vessels, an 800-passenger cruise vessel was evaluated.[28] This vessel had a crew of 259 and would operate in the Caribbean cruise trade. The analysis assumed U.S. construction and a partial union crew for the U.S.-flag vessel. Construction costs were $120 million in U.S. yards v. $100 million in foreign yards. The increased per diem passenger costs calculated for the U.S.-flag vessel was 35 percent above the foreign-flag vessel.

Thus, if cabotage laws were extended to cruises to nowhere, a potential of over 1,000 seagoing positions could be postulated based on the current market share for these operations, and some several hundred million dollars of U.S. shipbuilding business would follow if operators built new U.S. vessels to fill this market as it exists today. Whether the increase of about one-third in per passenger cost would be sustainable in this market is not clear. This example is purely hypothetical and subject to much uncertainty.

[27]Ibid.

[28]John H. Leeper and John W. Boylston, "The Emerging Domestic Cruise Industry," *Marine Technology*, January 1987, pp. 26-42.

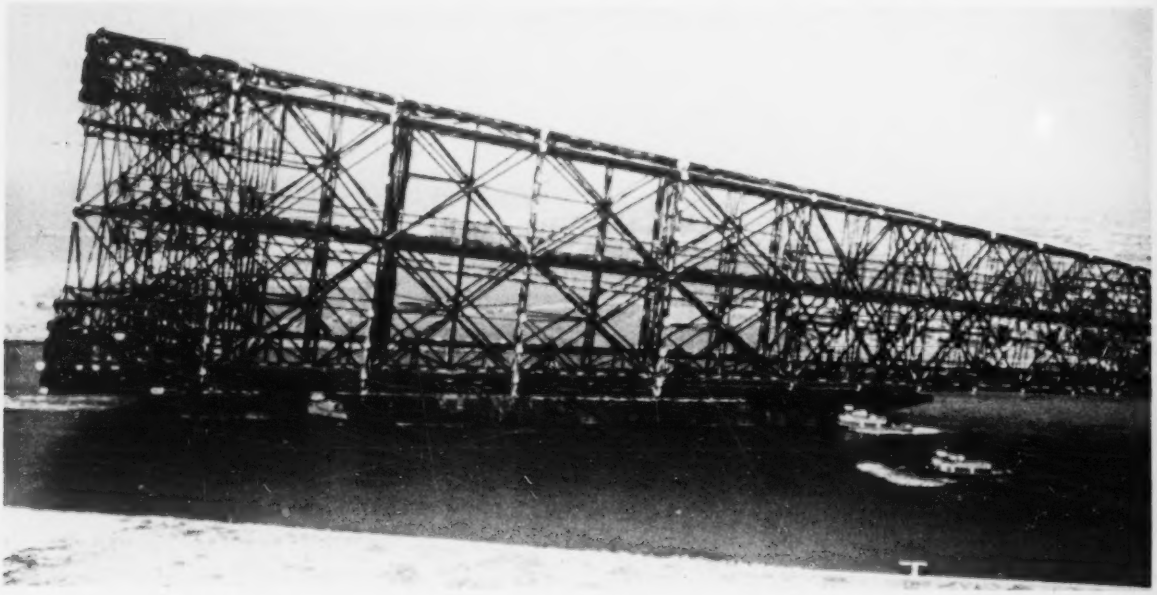


Photo credit: Shell Oil Co.

The largest steel platform in the world—Shell Oil's Bullwinkle—being carried on a foreign-flag barge from a U.S. shipyard to the oilfield in the Gulf of Mexico EEZ. Transportation from a U.S. point to a "pristine site" on the Outer Continental Shelf has been determined exempt from cabotage laws.

Chapter 5
Summary of Impacts From Extending Cabotage Policies

The foregoing evaluation has shown that very little hard data exists to project specific impacts from the several possible changes to cabotage law that have been investigated. However, OTA has taken the limited data, mixed it with some of the more plausible observations that were reported to us, and produced four summary tables. Table 8 shows the potential that appears for increases in seafaring jobs, table 9 the potential for shipbuilding business, and table 10 the potential for some national security enhancements—all from a possible extension of cabotage to those sectors where some data was available. Finally, table 11 shows some of the negative impacts to be expected from these cabotage extensions.

Table 8—Potential Increases in Seafaring Jobs With Extensions of Cabotage Laws

Potential change to cover	Addition to seafaring jobs: Low estimate	High estimate
Virgin Islands trade:		
Petroleum products	Nil	100 to 150
General cargo	0 to 50	50 to 100
Cruise ships	Nil	?
Offshore lightering	Nil	250 to 350
Geophysical vessels	0 to 50	100 to 150
Cruises to nowhere	Nil	1,000 to 1,250

SOURCE: Office of Technology Assessment, 1989.

Table 9—Potential for U.S. Shipbuilding With Extensions of Cabotage Laws

Potential change to cover	Shipbuilding potential
Virgin Islands trade:	
Petroleum	Minimal because of existing supply
General cargo	Minimal because of existing supply
Cruise ships	?
Offshore lightering	From 0 to 20, 80,000 dwt[a]
Geophysical vessels	Minimal[b]
Cruises to nowhere	From 0 to 10, 800 passenger ships[c]

[a]Each shuttle tanker could represent about $50 million in new building costs. dwt = dead weight tons
[b]If geophysical vessels are built, each could represent between $7 to $10 million in new building costs.
[c]Each cruise ship could represent about $120 million in new building costs.

SOURCE: Office of Technology Assessment, 1989.

Table 10—Potential of National Security Enhancements With Extensions of Cabotage Laws

Potential change to cover	Additions to strategic sea-lift
Virgin Islands trade:	
Petroleum	Nil
General cargo	Nil
Cruise ships	?
Offshore lightering	From nil to a possibility of 20 tanker additions
Geophysical vessels	Nil
Cruises to nowhere	Possibility of additions of passenger ships with troup carrying capabilities

SOURCE: Office of Technology Assessment, 1989.

Table 11—Potential Negative Impacts With Extensions of Cabotage Laws

Potential change to cover	Possible negative impacts
Virgin Islands trade:	
Petroleum	Refinery cost increases could affect Virgin Islands jobs and economy
General cargo	Increase costs of Virgin Islands imports
Cruise ships	Loss of tourist volume
Offshore lightering	Increased cost of oil imports
Geophysical vessels	Industry loss of foreign business
Cruises to nowhere	Increased costs to tourists could shift business elsewhere

SOURCE: Office of Technology Assessment, 1989.

In general, only a few benefits would seem to stem from the changes analyzed, but the investigations point to some findings of interest:

1. Of all the sectors evaluated, the commercial cruise industry—and especially the subsector of 1-day cruises to nowhere—appears to contain some significant benefits for U.S. interests if cabotage laws were applied. The business consequences of such an action are uncertain, but the added costs, if the action were successful, appear to be directed toward a generally healthy industry.
2. Most industry respondents to OTA's inquiries believe that the consequences of extending cabotage laws will take the form of an industry shift to alternatives that just further avoid a commitment to U.S.-built and U.S.-operated

vessels. The results, therefore, would tend to be more self-defeating than enhancing for the U.S. maritime industry.

3. National security enhancements from extending cabotage laws would take the form of a few possible additions to a strategic sea-lift capability and the resulting increase in seafaring employment implied. If the most favorable outcomes are assumed, the results could be U.S.-flag fleet additions of up to 20 shuttle tankers and 10 passenger ships. Both of these ship types are considered militarily useful.

4. There are some obvious direct costs—to other affected industries and to certain consumers—of extending cabotage laws. There are also some costs that are neither obvious nor certain. All of these must be carefully evaluated in each specific case in order to arrive at a sound policy choice.

Appendix A

List of Respondents to OTA Request for Data and Comments Re: Extending Cabotage Law

American Institute of Merchant Shipping
American Petroleum Institute Offshore Operators Committee
Avondale Industries, Inc.
Brown and Root International, Inc.
Crowley Maritime Corp.
Department of the Treasury, U.S. Customs Service
Federation of American Controlled Shipping
International Association of Drilling Contractors
International Association of Geophysical Contractors
Leeper, Cambridge & Campbell, Inc.
Lawrence G. Mallon, Attorney-at-Law
Matson Navigation Co.
OMI Petrolink Corp.
The University of Michigan Transportation Research Institute
U.S. Department of Transportation, Maritime Administration
Virgin Islands Port Authority

Other Comments Received From:

Cynthia Brown, Shipbuilders Council of America
Wayne Christensen, Consultant
Joseph Cox, American Institute of Merchant Shipping
Larry Evans, Transportation Institute
Joseph Farrell, American Waterways Operators
Tom Gillette, Exxon Shipping Co.
Michael Grable, National Marine Fisheries Service
Leslie Kanuk, Baruch College
Frank T. Manheim, State University of New York, Stony Brook
Henry Marcus, Massachusetts Institute of Technology
John W. McConnell, Haight, Gardner, Poor & Havens
Robert Nevel, Commission on Merchant Marine and Defense
John Reurs, International Commission of Passenger Lines

Appendix B

The Effects of Cabotage Policy Changes on Other Maritime Sectors

For the purposes of this study, OTA selected four important maritime industry sectors to review and to investigate what, if any, impacts may result from changes in current cabotage policies. The results of those investigations are covered in the main body of this report. The following are brief discussions of each of the other sectors identified. They contain a snapshot of each activity and the current applicability of cabotage policies to that sector. Brief comments are also included concerning the effects of expanding cabotage policies within each sector. The background for these comments were supplied to OTA by the Maritime Administration and the U.S. Customs Service and reviewed by a number of industry representatives.

Commercial Fisheries

Commercial fishing has been and continues to be a significant U.S. maritime activity within the 200-mile Exclusive Economic Zone (EEZ). Commercial fishing vessels operate in the ocean waters off all coasts, with particular concentrations in the North Atlantic, the Gulf of Mexico, and in Alaskan waters. A great variety of vessel types and sizes are used. A total of about 38,000 commercial fishing vessels (over 5 net tons) were engaged in fishing activities in the United States during 1987, with a total shipboard employment of almost 250,000. The size of the fleet and the number of fishermen employed has increased gradually over the past 10 years, and the percentage of the EEZ catch that is harvested by domestic (versus foreign) vessels has increased dramatically, to about 95 percent today.

A key law governing the operation of fishing vessels within the EEZ is 46 U.S.C. 12108. Under this law, only a U.S. built, owned, and documented vessel may engage in the fisheries in U.S. territorial waters or the EEZ, unless the vessel is issued a permit under the Magnuson Fishery Conservation and Management Act (FCMA) (16 U.S.C. 1801 *et seq.*). The definition of "fisheries" for purposes of section 12108, in 46 U.S.C. 12101(a), was recently amended by the Commercial Fishing Industry Vessel Anti-Reflagging Act of 1987 (Public Law 100-239; 101 Stat. 1778). The current definition of "fisheries," in the law is: engaging in the processing, storing, transportation (except in foreign commerce), planting, cultivating, catching, taking, or harvesting of fish and related marine species and vegetation in U.S. navigable waters and the EEZ. The words "processing, storing, and transporting (except in foreign commerce)" were added by Public Law 100-239. U. S.-flag vessels engaged in the fisheries must be documented with a fishery license or a registry with a fishery endorsement.

Foreign vessels may engage in fishing activities in the EEZ if they have a permit issued by the National Marine Fisheries Service pursuant to the FCMA. Unless permitted by treaty, foreign-flag vessels may not land, in the United States, fish caught or received on the high seas, whether inside or outside the EEZ (see 46 U.S.C. app. 251(a)).

Vessels constructed or reconstructed overseas may be granted a license to fish in the territorial sea and the EEZ adjacent to Guam, American Samoa, and the Northern Mariana Islands. Such vessels must be less than 200 gross tons and otherwise eligible for U.S. documentation and a fisheries license or endorsement.

Since commercial fishing is already effectively restricted to U.S.-flag vessels documented for the fisheries, any policy to extend cabotage laws to include fisheries would have very little effect upon the actual practice even though the requirement for U.S. citizen ownership or control of vessels is somewhat less rigorous under FCMA than under the Shipping Act of 1916. Of course, more restrictive provisions limiting the role of foreign fishing vessels in the U.S. EEZ could be proposed, but the existing policy is based upon the goal of reserving for U.S. fisheries all of the catch up to their capabilities and then allowing foreign fisheries to harvest the surplus. Therefore, it would not be reasonable to expect further economic benefit to U.S. operators if present laws were more restrictive of foreign participation. For these reasons, OTA has concluded that it would not be productive to analyze the costs and benefits of extending cabotage policies to commercial fishing vessels.

Dredging Vessels

Dredging is a maritime activity that, in the past, has been mostly confined to shallow waters within the territorial sea but, when supporting some of the offshore petroleum activities and other mineral recovery in the EEZ, it has become necessary to think of dredging as an activity that could and does take place far offshore. Most of the harbor and channel dredging activities have been accomplished by the U.S. Army Corps of Engineers, either using Army vessels or vessels under contract to the Army. In addition to an ongoing need for channel dredging, some growth in dredging as support to other offshore activities has taken place in recent years. One

example of this is the dredging needed to construct offshore gravel islands in the Beaufort Sea that have been used as oil production platforms there.

Dredges operating in the United States must be U.S.-built, although foreign ownership and registry are permitted (as provided in 46 app. U.S.C. 292). This policy has been extended (pursuant to the OCSLA) to dredging on the OCS for the purposes of exploring for, developing, or producing resources from the OCS.

In addition to the above, a recent law (Public Law 100-329) amended section 27 of the Merchant Marine Act of 1920 to require that any dredged material that is transported:

- between points and places within U.S. territory;
- between points or places within the EEZ; or
- between points or places within U.S. territory and points or places within the EEZ;

must be transported in a U.S. built, owned, and documented vessel. The combined effect of these provisions reserves the dredging trade in U.S. territorial waters and the EEZ to U.S.-built dredges and transport vessels only. In addition, the transport vessels must also be U.S. owned and documented.

It appears that any changes in cabotage policies to extend coverage to dredging vessels would have little or no effect on the current industry practices. It could be possible to amend 46 app. U.S.C. 292 to require U.S. ownership of dredges (as well as U.S. construction), however, that condition is in fact met by almost all of the fleet today. It could also be possible to include dredging within the EEZ for purposes other than that covered under the OCSLA, but they would have only minor importance at present. The Customs Service also warns that it may be confusing to have two statutory provisions applying coast-wise laws to both the EEZ and the OCS because they have different definitions of geographic coverage.

Marine Mining Vessels

Marine mining is only currently an active industry in a few specialized areas such as: offshore sand and gravel recovery near New York harbor, and alluvia gold mining offshore of Nome, Alaska. Near-term prospects for significant development of a marine mining industry are not good. Much more information about potential mineral resources in the EEZ would be needed before any major commercial mining activity would be contemplated.

The statute covering dredging (46 app. U.S.C. 292), discussed above, also applies to marine mining in the OCS. That is, mining vessels must be U.S. built but not necessarily U.S. owned and operated. Vessels transporting mined material from a point on the high seas within the EEZ to the United States would be covered under cabotage policies. The Deep Seabed Hard Minerals Resources Act (30 U.S.C. 1401 et seq.; 94 Stat. 553) even contains provisions requiring certain vessels to be U.S. documented when recovering minerals from the deep seabed beyond the EEZ if they are operating under a permit pursuant to this act. No deep-sea mining is now underway or planned.

Given the infancy of the marine mining industry and the fact that most activities would be covered under cabotage policies, OTA has concluded that further analysis of this industry is not needed at this time.

Waste Disposal Vessels

Waste disposal operations in the ocean are growing in recent years as a series of waste disposal problems become more acute for the Nation as a whole and the options of dumping in the ocean, incineration at sea, or just transporting by sea are proposed and, in some cases, used. The current fleet of waste disposal vessels is small and operations are concentrated near some of the major U.S. metropolitan areas such as New York. But this activity will certainly grow, and it may grow substantially.

A recent law, The Transportation of Sewage Sludge Act (Public Law 100-329, 102 Stat. 588) amended section 27 of the Merchant Marine Act of 1920 (the Jones Act) to require that vessels used to transport valueless material (including tugs used to tow barges) from a point or place in U.S. territory to a point or place on the high seas within the EEZ, as well as between any two points within those areas, be U.S. built, owned, and documented. A few exemptions were made in the law including certain barges under construction in a foreign shipyard or already in use by a municipality when the law was passed.

Actual offshore dump sites are designated by the Environmental Protection Agency, either in published regulations or as part of the individual dumping permits issued.

Transportation of hazardous waste from a point in the United States for the purpose of incineration of that waste at sea is subject to cabotage under the eighth and ninth provisos of the Jones Act. No U.S.-flag incinerator ships exist today, and construction of two new buildings has been suspended. Two U.S.-owned, foreign-flag incinerator ships were "grandfathered" to make them eligible for coast-wise trade. The development of incinerator ships stopped in 1987 when EPA decided not to complete final rules for issuing permits to burn waste at sea. It is not clear when such rules might be considered again or, therefore, if and when hazardous waste incineration at sea would be

possible under a U.S. permit. Incineration at sea of nonhazardous wastes, however, has been proposed and it may be possible to anticipate that such activity may become important in the future.

Since most existing and potential activities within the EEZ using waste disposal vessels are already covered by cabotage policies, it appears that a general geographic extension of cabotage would have little or no effect on current practice in the industry.

Icebreaking Vessels

Most of the icebreaking operations that take place in U.S. waters are carried out by Coast Guard icebreakers, with some assistance from the Canadian Coast Guard and a few private icebreaking vessels. There is usually not a sufficient thickness of ice offshore U.S. coasts to require icebreakers except for Alaskan waters. In Alaskan waters the current practice for transportation by sea is to bring shipping through only during the summer, ice-free season and to stockpile during the winter. This reduces the need for icebreaking services to a minimum.

In the future, there may be an increased need for Alaskan waters icebreaking services if major offshore oil and gas resources are discovered and produced. Some plans for such production in the Beaufort, Chukchi, and Bering Seas call for icebreakers to assist tankers and other vessels engaged in offshore oil transportation.

Currently there are no cabotage laws that apply to commercial icebreaking vessels. Foreign-flag icebreakers could be used in the U.S. EEZ, but the present requirements for the service are limited and such vessels have been used in the past only for certain specialized operations. Extension of cabotage policies to include icebreaking as an activity that would be covered, could have the effect of limiting the activity to U.S. built, owned, and operated vessels. However, the only significant future need for commercial icebreakers seems to be in the offshore oil and gas industry, and OTA has noted this under the analysis of oil and gas exploration and development.

Shipping in U.S. Pacific Territories

Guam, American Samoa, and The Commonwealth of the Northern Marianas all are presently exempt from cabotage to some extent. The laws that govern shipping operations in these waters are different from the other U.S. cabotage laws cited above.

Foreign-built vessels under U.S. ownership and registry may trade within Guam and between Guam and other U.S. points. American Samoa is totally exempt from cabotage. Only activities of the Federal Government or its contractors within the Northern Marianas are subject to cabotage. As noted in the section on commercial fisheries, foreign built or rebuilt fishing vessels of less than 200 gross tons, which are otherwise eligible for documentation and a fisheries license or endorsement, may be issued a license to engage in fishing in the territorial sea and fishery conservation zone adjacent to the three territories.

Some in the U.S. maritime industry have suggested that laws affecting trade with and within Guam be changed so as to apply standard U.S. cabotage policies here. This would have the effect of requiring U.S. built and operated vessels to be used. While it appears that increased tourism and military construction on Guam would create some growing demand for shipping services, OTA has not obtained specific data that would allow an accurate estimate of these effects on the shipping industry.

The U.S. Maritime Administration has commented that an extension of cabotage policies to these territories would affect principally American Samoa and the Northern Marianas because there are currently no regular U.S.-flag shipping services to either Samoa or the Northern Marianas; there are two foreign-flag services between Samoa and the U.S. mainland and most service to the Northern Marianas is through Japan. Here again, OTA has not obtained data to make any accurate estimate of costs and benefits of these possible changes.

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Requests for studies are made by chairmen of standing committees of the House of Representatives or Senate; by the Technology Assessment Board, the governing body of OTA; or by the Director of OTA in consultation with the Board.

The Technology Assessment Board is composed of six members of the House, six members of the Senate, and the OTA Director, who is a nonvoting member.

OTA has studies under way in nine program areas: energy and materials; industry, technology, and employment; international security and commerce; biological applications; food and renewable resources; health; communication and information technologies; oceans and environment; and science, education, and transportation.

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